Critical Release Notice

Publication number: 297-1001-118
Publication release: Standard 04.02

The content of this customer NTP supports the SN06 (DMS) and ISN06 (TDM) software releases.

Bookmarks used in this NTP highlight the changes between the baseline NTP and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the baseline NTP remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to new or modified content for the baseline NTP that is valid through the current release.

Red: Applies to new or modified content for NA017/ISN04 (TDM) that is valid through the current release.

Blue: Applies to new or modified content for NA018 (SN05 DMS)/ISN05 (TDM) that is valid through the current release.

Green: Applies to new or modified content for SN06 (DMS)/ISN06 (TDM) that is valid through the current release.

Attention!
Adobe® Acrobat® Reader™ 5.0 is required to view bookmarks in color.

Publication History

March 2004

Standard release 04.02 for software release SN06 (DMS) and ISN06 (TDM).

Change of phone number from 1-800-684-2273 to 1-877-662-5669, Option 4 + 1.

297-1001-118

DMS-100 Family

Magnetic Tape

Reference Manual

BASE08   Standard 04.01   August 1999

NORTEL

NORTHERN TELECOM

DMS-100 Family

Magnetic Tape

Reference Manual

Publication number: 297-1001-118
Product release: BASE08
Document release: Standard 04.01
Date: August 1999

Publication history

August 1999

Standard 04.01. Added information on IOM DAT tape.

April 1998

Standard 03.03. Document migrated into new template.

February 1993

Standard 03.02. Added information on multivolume tape files, and made minor editorial changes.

Contents

About this document

When to use this document

This document describes the characteristics of the recording format for magnetic tapes used with the DMS-100 Family of switches.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *Product Documentation Directory*, 297-8991-001.

References in this document

The following documents are referred to in this document:

- *Product Documentation Directory*, 297-8991-001
- *SuperNode Technical Specification*, PLN-5001-001
- *Translations Guide*, 297-YYYY-350
- *Maintenance and Administration Tools Description*, 297-1001-107
- *Automatic Message Accounting - Northern Telecom Format*, 297-1001-119
- *DMS-100 Family Basic Administration Procedures*, 297-1001-300
- *Operational Measurements Reference Manual*, 297-YYYY-814

- *DMS-200 Call Detail Recording Description*, 297-2301-119

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

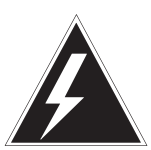


DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage



WARNING

Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

> **CAUTION**
> **Possible loss of service**
> Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Introduction

General

This document describes the characteristics of the recording format for magnetic tapes used with the DMS-100 Family of switches.

IOC 9-track tape and IOM DAT tape use this format.

Magnetic tapes are external devices used to store data from the following sources:

- Automatic Message Accounting (AMA)
- Call Detail Recording (CDR) of local calls
- CDR for the DMS-300 International Switch
- Operational Measurements (OM)
- Office Image (for system backup)
- Customer Data Modification (CDM)
- Office Data Modification (ODM)
- Trouble diagnostic data

How to check the version and issue of this document

This document uses numbers (like 01.01) to indicate the version and issue of the document.

The first two digits indicate the version. The version number increases with each update that support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases with each revision when the document is released again in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

Determine which version of this document applies to the software you have and determine the order of this document. Refer to the release information in *Product Documentation Directory.*

References in this document

This document refers to the following documents:

- *297-8991-001 Product Documentation Directory*
- *PLN -5001-001 SuperNode Technical Specification*
- *297-YYY-350 Translations Guide*
- *297-1001-107 Maintenance and Administration Tools Description*
- *297-8991-001 Product Documentation Directory*
- *297-1001-119 Automatic Message Accounting – Northern Telecom Format*
- *297-1001-300 DMS-100 Family Basic Administration Procedures*
- *297-YYYY-814 Operational Measurements Reference Manual*
- *297-2301-119 DMS-200 Call Detail Recording Description*
- *GC26-3783 IBM Manual OS/VS1 Data Management Service Guide*
- *GC26-3795-3 IBM Manual OS/VS Tape Labels*
- *ANSI X3.203 Helical-scan digital computer tape cartridge for information interchange (3.81 mm [0.150 in] digital data storage [DDS] recorded format)*

Magnetic tape recording characteristics

9–track recording format

This section describes the 9-track recording format.

The DMS-100 accepts magnetic tape that has the following recording characteristics:

- 9-track format,
- recording density of 1600 bytes per inch (BPI)
- Phase-Encoded (PE) recording method,
- tape characters recorded across the tape, consisting of 8 bits of data plus 1 parity bit (odd parity),
- blocksize of between 18 and 2048 bytes, tape characters, arranged in accordance with the American National Standards Institute (ANSI) recording format for magnetic tape.

Block arrangement

The DMS-100 accepts a 9-track tape, recorded using Phase Encoding, at a density of 1600 CPI or BPI with odd parity (see Figure 2-1 on page 2-3). Data is arranged on tape in accordance with the ANSI recording format. This format consists of a density identification area, an initial gap, preambles, blocks of data of variable length, postambles, and strategically placed interrecord gaps and tape marks. The functions of various parts of the recording format are as follows:

BOT — A beginning of tape (BOT) marker is a reflective strip that marks the beginning of the permissible recording area. The tape is positioned at the leading edge of the BOT marker after being manually loaded.

ID burst — The identification (ID) burst is a pattern of flux changes, on one track only, that identifies the tape as being phase-encoded when it is loaded onto a dual-density tape drive.

Initial gap — An initial gap is the portion of the tape between the trailing edge of the BOT marker and the first block of

data.

Interrecord gap	An interrecord gap (IRG), is a portion of the tape where there are no flux changes. An IRG is 15 mm (0.6 in.) in length and is used to separate the ID burst, blocks of data, and tapemarks.
Preamble	A preamble precedes the actual data in a block, and is a sequence consisting of 40 zeros (0000...) followed by a one (1) in each track. The zeros synchronize clocks, and the one signals the beginning of the data.
Block	A block is a group of related data of between 18 to 2048 tape characters in length and can contain one or more records.
Postamble	A postamble is a mirror image of the preamble consisting of a one (1) followed by 40 zeros (0000...) in each track. The postamble follows the data in a block.
Tape mark	A tape mark is a special control block that has a pattern of flux changes in 6 out of 9 tracks and is 40 characters in length. It is used to separate data sets from label groups.
Data set	A data set can contain one or more records that are organized into blocks in various formats, as described Chapter 4 on page 4-1.
EOT marker	An end of tape (EOT) marker is a reflective strip located about 7.6 m (25 feet) from the end of the tape. It indicates the end of the normal permissible recording area. In some instances, such as the transfer entry, data may be written beyond the marker. Transfer Entries occur when the EOT marker is detected. See *Automatic Message Accounting - Northern Telecom Format*, 297-1001-119 for a description of tape transfers and Transfer Entry.

Figure 2-1
Recording Format - 9-Track Magnetic Tape

Gap 25 mm (1.0 in.)	
Density ID area 61 mm (2.425 in.)	Beginning of tape marker
Initial gap 60 mm (2.4 in.)	
Interrecord gap 15 mm (0.6 in.)	
Preamble 41 characters	
Data block 18–2048 characters	Volume label 80 characters
Postamble 41 characters	
Interrecord gap 15 mm (0.6 in.)	
Preamble 41 characters	
Data block 18–2048 characters	HDR1 label 80 characters
Postamble 41 characters	
Interrecord gap 15 mm (0.6 in.)	
Preamble 41 characters	
Data block 18–2048 characters	HDR2 label 80 characters
Postamble 41 characters	
Interrecord gap 15 mm (0.6 in.)	
Tapemark 40 characters	
Interrecord gap 15 mm (0.6 in.)	
	Data set A

Start position of write head when tape is positioned to leading edge of beginning of tape marker

Identification burst 120 mm (4.825 in.)

1 character = 9 bits across tape, 1 bit per track

Forward tape motion

Note 1: Dimensions are shown in metric; inches are shown in parentheses.
Note 2: The tape is shown oxide side up; the read/write head is on the same side as the oxide.
Note 3: The tape is to be fully saturated in erased direction in initial gap and interrecord gap.
Note 4: The per-track placement tolerance is 0.075 mm (0.003 in.)
Note 5: Flux changes are omitted for clarity.
Note 6: The format is based on ANSI.

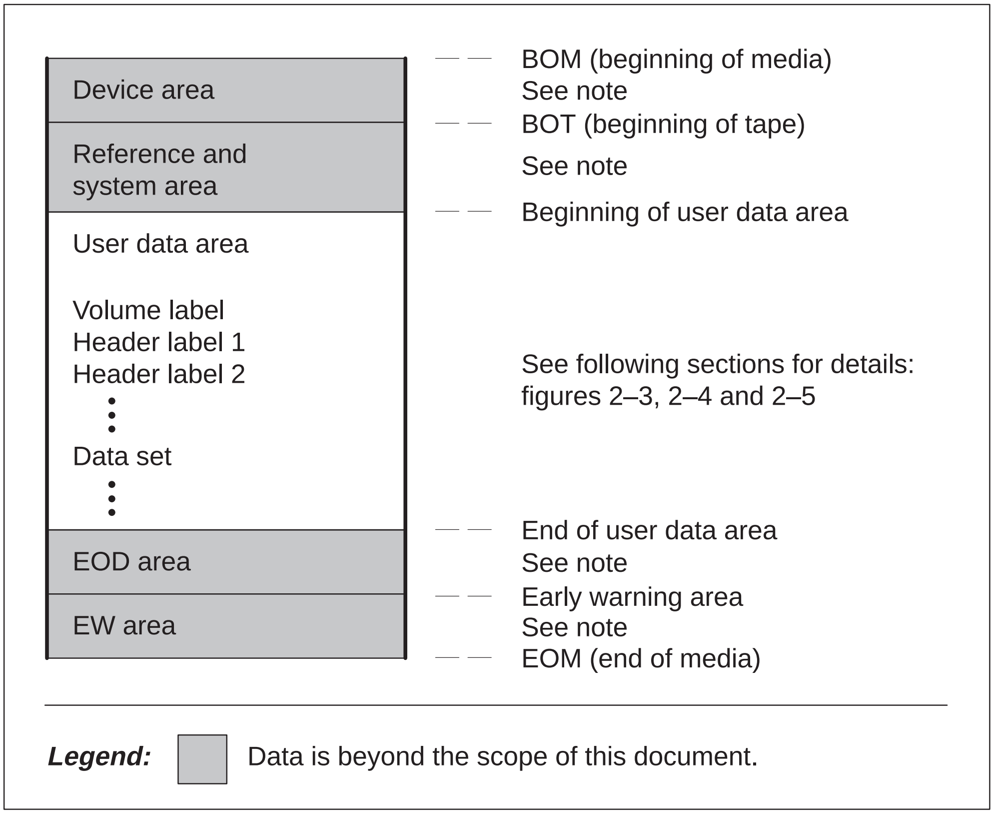
IOM DAT tape recording format

This section describes the IOM DAT tape recording format.

The IOM DAT tape format has a block size between 18 and 2048 bytes.

The logical structure of data on IOM DAT tape is shown in Figure 2-2.

Figure 2-2
Logical structure of data on IOM DAT tape



Data (every 2 bytes) is stored on the tape in Little Endian or Big Endian format.

The IOM DAT tape default is Little Endian.

The relationships of these formats with a tape of volume name TEST are as follows:

Incoming data	Little Endian	Big Endian
VOL1TEST	OV1LETTS	VOL1TEST

Data capacity

The amount of uncompressed data that can be stored on different length cartridges is as follows:

length of cartridge	format	capacity
60 meters	DDS-1	1.3 GByte (typical)
90 meters	DDS-1	2.0 GByte (typical)
120 meters	DDS-2	4.0 GByte (typical)

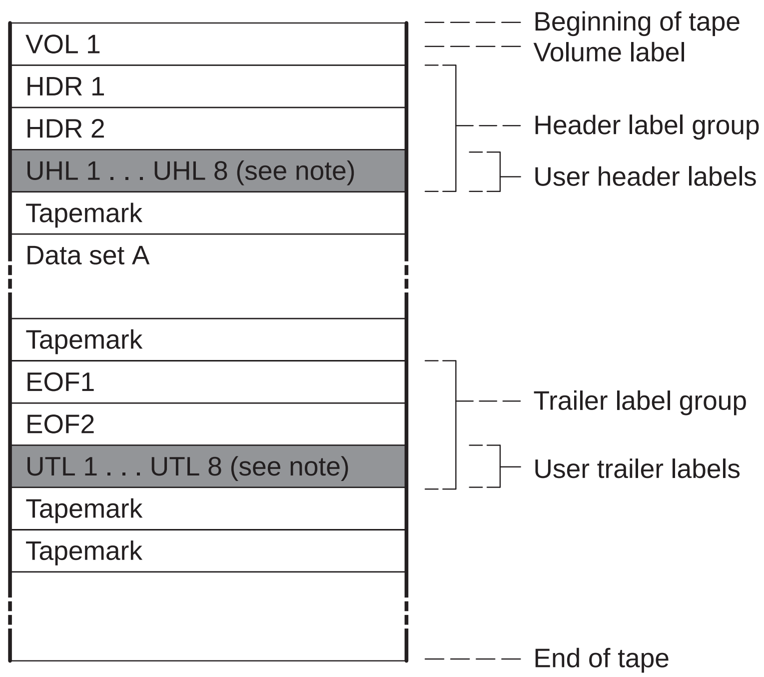
Volume organization

Data sets can be stored on the tape as follows:

- a single set on a single volume (see Figure 2-3)
- a single set on multiple volumes
- multiple sets on a single volume (see Figure 2-4)
- multiple sets on multiple volumes (see Figure 2-5)

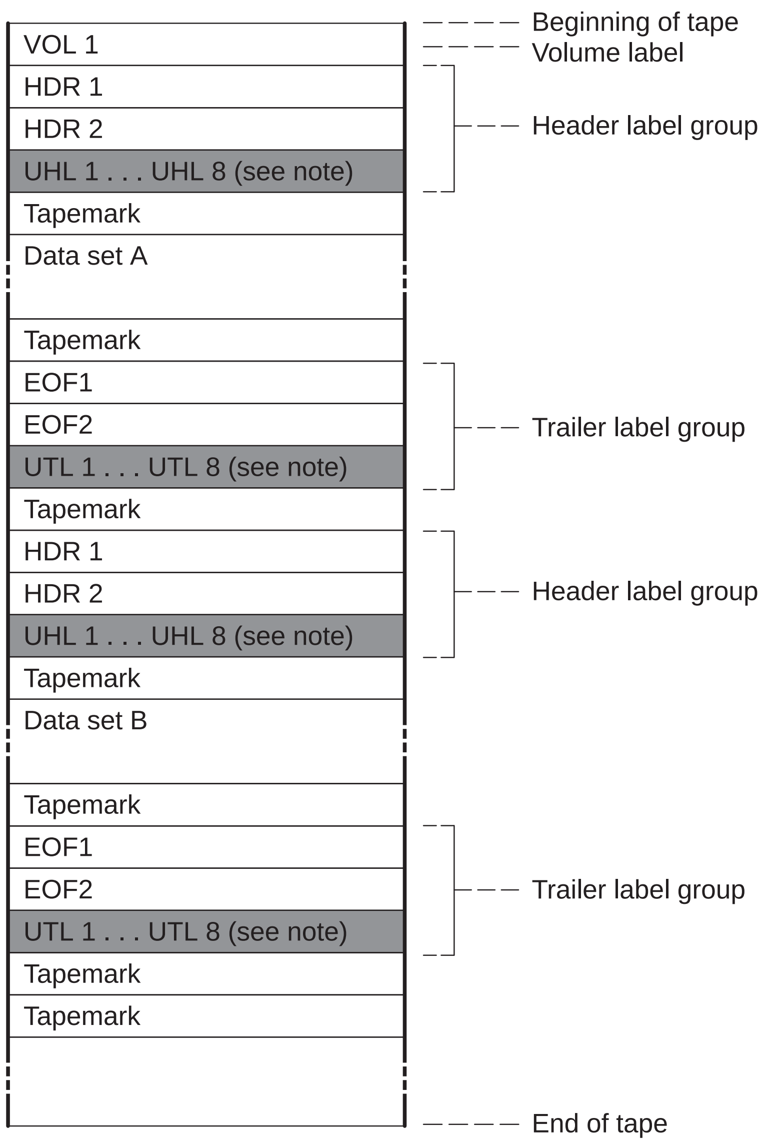
For additional information, refer to IBM Manual GC26-3795-3 OS/VS TAPE LABELS.

Figure 2-3
Label Structure - Single Data Set - One Volume



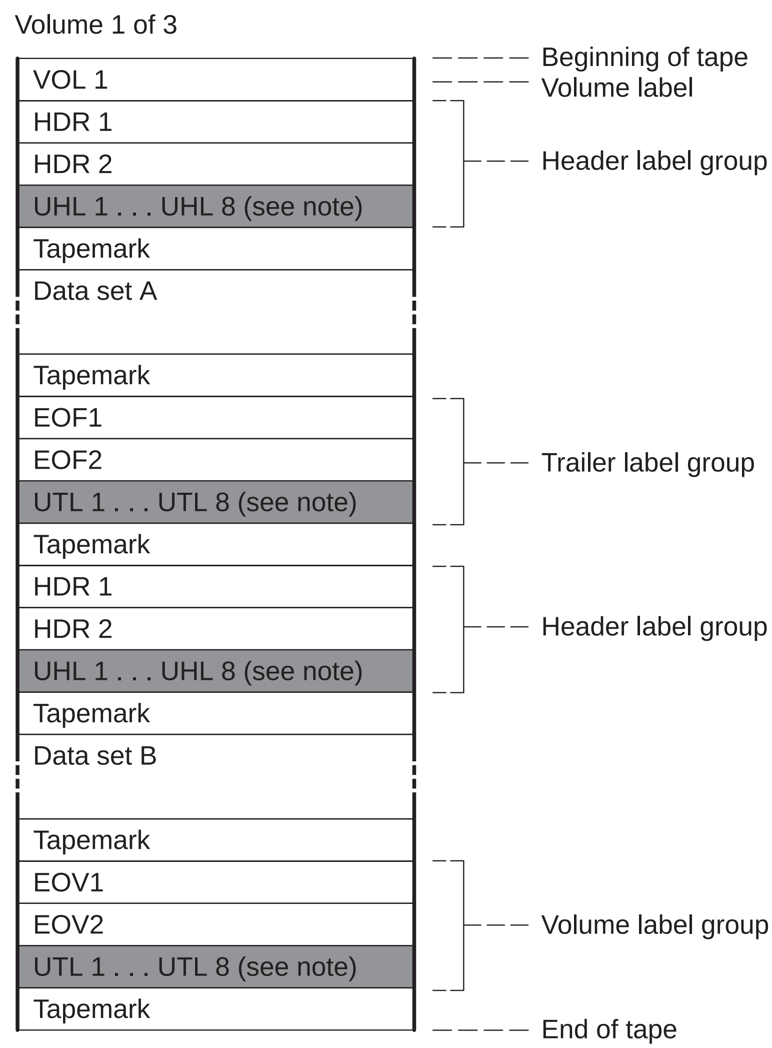
Note: Shaded labels are optional.

Figure 2-4
Label Structure - Multiple Data Sets - One Volume



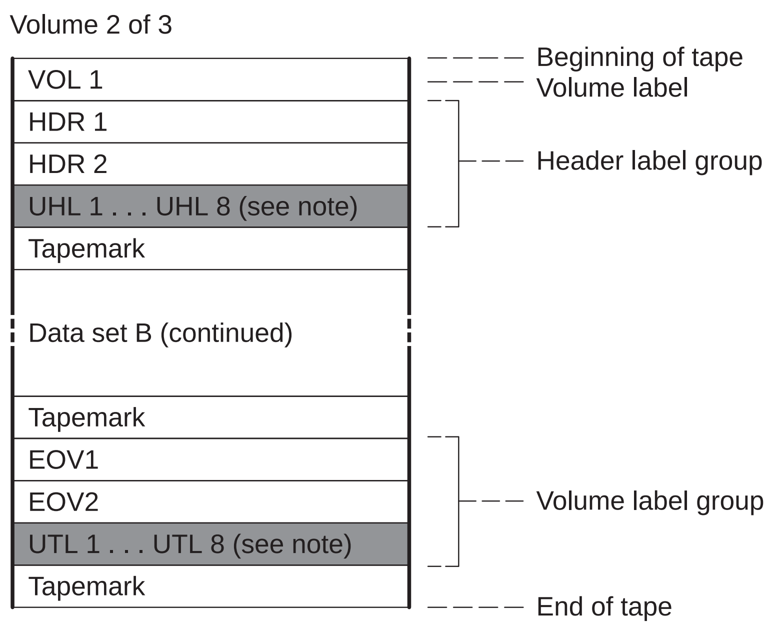
Note: Shaded labels are optional.

Figure 2-5
Label Structure - Multiple Data Sets - Multiple Volumes (Part 1 of 3)



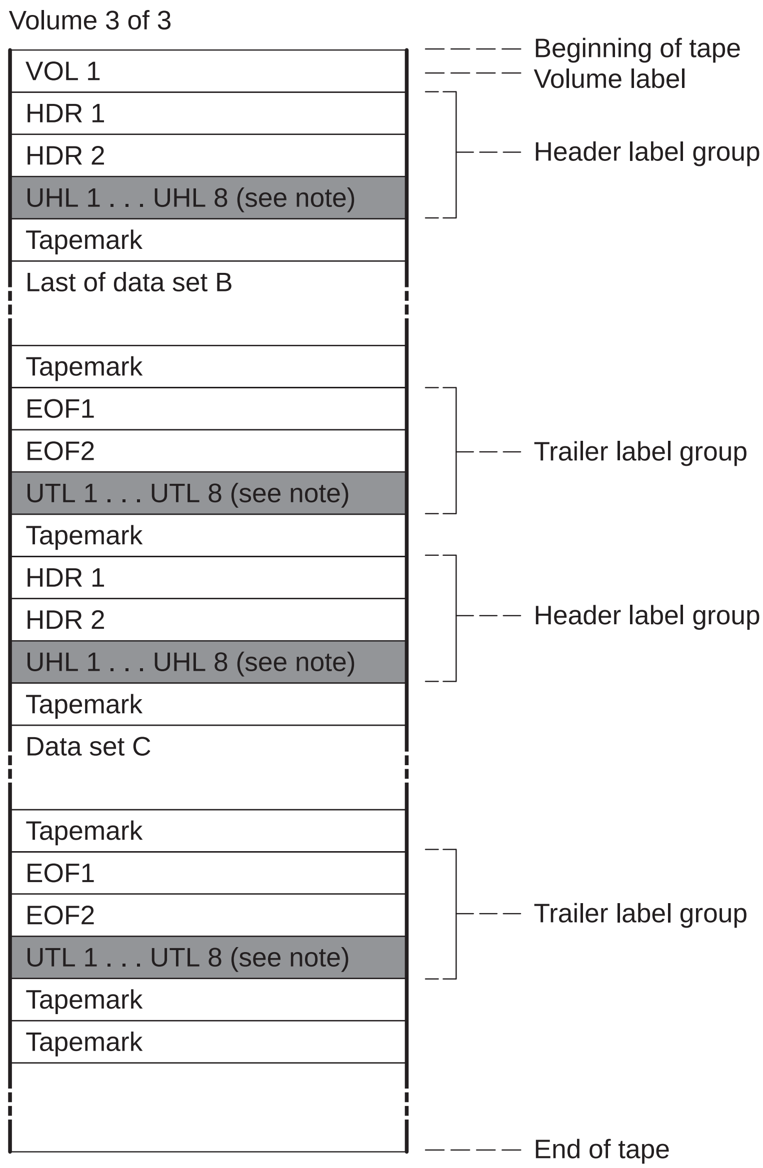
Note: Shaded labels are optional.

Figure 2-6
Label Structure - Multiple Data Sets - Multiple Volumes (Part 2 of 3)



Note: Shaded labels are optional.

Figure 2-7
Label Structure - Multiple Data Sets - Multiple Volumes (Part 3 of 3)



Note: Shaded labels are optional.

IBM standard labels

General

The DMS system uses IBM Standard Labels to identify the magnetic tape volumes and the data set(s) or file(s) they contain to provide a basis for efficient downstream processing. The relative position of these labels is shown in Figure 2-3 on page 2-6, and Figure 2-4 on page 2-7 .

The tapemark, which acts as a delimiter or separator, follows the header and trailer label groups, and each data set. Two tapemarks follow the trailer label group to indicate that the end of the last data set on the volume has been reached.

All labels are recorded in Extended Binary-Coded Decimal Interchange Code (EBCDIC) and written as 80-byte blocks. The first 4 bytes always correspond to the label identifier itself, such as VOL1 or HDR1. The contents of the remaining 76 bytes of each block differ according to the label.

Following is a list of those labels currently being used by the system, and the references to the tables that define the label coding:

- Volume label (VOL) (Table 3-1 on page 3-2)
- Header label (HDR) 1 (Table 3-2 on page 3-2)
- Header label 2 (Table 3-3 on page 3-4)
- User header labels (UHL) (Table 3-4 on page 3-6)
- End of file (EOF) label 1 (Table 3-5 on page 3-6)
- End of file label 2 (Table 3-6 on page 3-6)
- End of volume (EOV) label 1 (Table 3-7 on page 3-7)
    — For multiple-volume situations, this label indicates the end of the present volume and the continuation of the data set to another volume. It contains information identical to the HDR1 label except for the label identifier.
- End of volume label 2 (Table 3-8 on page 3-7)

- — For multiple-volume situations this label indicates the end of the present volume and the continuation of the data set to another volume. It contains information identical to the HDR2 label except for the label identifier.
- User Trailer Labels (UTL) (Table 3-9 on page 3-7)

Table 3-1
VOLUME LABEL (VOL1)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be VOL
Label number	4	1	Must be 1
Volume serial #	5 to 10	6	Six characters, permanently assigned to the owner, to identify the physical volume. For multivolume tapes, this field contains the serial number of the first tape of the volume set. If fewer than six characters, this name must be left justified and the remainder padded with blanks.
Reserved	11	1	Must be 0
Reserved	12 to 41	30	Value is spaces
Owner name, addr.	42 to 52	10	Any code or name to specify organization, person, etc. to which the volume belongs.
Reserved	52 to 80	29	Value is spaces

Table 3-2
HEADER 1 (HDR1)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be HDR
Label number	4 to 4	1	Must be 1
Data set ID	5 to 21	17	The first 17 bytes of the data set name given by the owner when data set was created. If the data set name is less than 17 bytes, it is left justified and the remainder of this field is padded with blanks.
Data set ser. #	22 to 27	6	Value is the same as volume serial number in volume label.

—continued—

Table 3-2
HEADER 1 (HDR1) (continued)

NAME	BYTES	TOT	DESCRIPTION
Volume seq. #	28 to 31	4	Value is set to 0001 for single volume tapes. For multivolume tapes, the number in this field indicates the order of the tape within the volume set.
Data set seq. #	32 to 35	4	A number (0001-9999) that indicates the relative position of a data set within a data set group. This number is always 0001 for a single data set organization.
Generation number	36 to 39	4	Value is spaces
Version Number	40 to 41	2	Value is spaces
Creation date	42 to 47	6	Year and day when the data set was created. The date is shown in the format byyddd where: b = space yy = year (00 - 99) ddd = day (001 - 366)
Expiration date	48 to 53	6	Same format as in creation date. This data set is regarded as expired when today's date is equal to, or later than the date given in this field. When this condition is satisfied, the remainder of this volume may be overwritten. The value of this field may be creation date plus an optional value, for data set protection. Value is zeros (0000...) if no expiration date is desired.

—continued—

Table 3-2
HEADER 1 (HDR1) (continued)

NAME	BYTES	TOT	DESCRIPTION
Data set security	54 to 54	1	A code number that indicates the security status of the data set, as follows: 0 = No security protection 1 = Security protection 3 = Security protection ***Note 1:*** For code 1, additional identification of data set is required for read/write or delete. ***Note 2:*** For code 3, additional identification of data set is required for write or delete.
Block count	55 to 60	6	Value is zero
System code	61 to 73	13	Unique code that identifies the system
Reserved	74 to 80	7	Value is spaces

—end—

Table 3-3
HEADER LABEL 2 (HDR2)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be HDR
Label number	4 to 4	1	Must be 2
Record format	5 to 5	1	An alphabetic character that indicates the format of records in associated data sets, as follows: F = Fixed length V = Variable length

—continued—

Table 3-3
HEADER LABEL 2 (HDR2) (continued)

NAME	BYTES	TOT	DESCRIPTION
Block length	6 to 10	5	A number up to 2048 that indicates the block length. Interpretation depends on record format field, as follows: Format F - Block length (Must be a multiple of logical record length in Record length field below) Format V - Maximum block length (including the 4-byte length indicator in the blocks)
Record length	11 to 15	5	A number that indicates record length, in bytes, based on the record format as follows: Format F - Logical record length Format V - Maximum logical record length (including the 4-byte length indicator in the records)
Tape density	16 to 16	1	Value is 3 for 1600 CPI (BPI) (PE)
Reserved	17 to 17	1	Value is zero
System ID	18 to 23	6	Value is DMS100
Non std attributes	24 to 34	11	Value is spaces, except when the file is an office image file, then the value is I
Tape recording	35 to 36	2	Value is spaces for 9-track tape
Control characters	37 to 37	1	Value is space
Reserved	38 to 38	1	Value is space
Block attribute	39 to 39	1	Value is R, meaning blocked and spanned records, and B, meaning blocked records
Reserved	40 to 80	41	Value is space

—end—

Table 3-4
USER HEADER LABELS 1 - 8 (UHL1-UHL8)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be UHL
Label label number	4 to 4	1	A number (1 - 8) that indicates the relative position of this label within a set of labels of the same type.
User specified	5 to 80	76	Data set information specified by the user.

Table 3-5
END OF FILE LABEL 1 (EOF1)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be EOF
Label number	4 to 4	1	Must be 1
See HDR1 label	5 to 54	50	Same as corresponding fields in HDR1 label.
Block count	55 to 60	6	Six numeric characters denoting the number of data blocks (exclusive of labels and tape marks) since the preceding HDR label group.
See HDR1 label	61 to 80	20	Same as corresponding fields in HDR1 label.

Table 3-6
END OF FILE LABEL 2 (EOF2)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be EOF
Label number	4 to 4	1	Must be 2
See HDR2 label	5 to 80	76	Same as corresponding fields in HDR2 label.

Table 3-7
END OF VOLUME LABEL 1 (EOV1)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be EOV
Label number	4 to 4	1	Must be 1
See HDR1 label	5 to 54	50	Same as corresponding fields in HDR1 label.
Block count	55 to 60	6	Six numeric characters denoting the number of data blocks (exclusive of labels and tape marks) since the preceding HDR label group.
See HDR1 Label	61 to 80	20	Same as corresponding fields in HDR1 Label.

Table 3-8
EOV LABEL 2 (EOV2)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be EOV
Label Number	4 to 4	1	Must be 2
See HDR2 label	5 to 54	50	Same as corresponding fields in HDR2 label.
Block count	55 to 60	6	Six numeric characters denoting the number of data blocks (exclusive of labels and tape marks) since the preceding HDR label group.
See HDR2 label	61 to 80	20	Same as corresponding fields in HDR2 Label.

Table 3-9
USER TRAILER LABELS 1 - 8 (UTL1-UTL8)

NAME	BYTES	TOT	DESCRIPTION
Label identifier	1 to 3	3	Must be UTL
Label number	4 to 4	1	A number (1 - 8) that indicates the relative position of this label within a set of labels of the same type.
User specified	5 to 80	76	Data set information specified by the user.

Data set logical record formats

General

A data set is composed of a number of logical records, which are organized into blocks of variable length. This variable-length blocked (VB) record format is used for most DMS-100 Family data sets. A few data sets are written in variable-length blocked spanned (VBS) format, but are also acceptable to the system.

Blocking is the process of grouping a number of logical records as a physical block. A block is made up of the data records between the interrecord gaps and may be 18 to 2048 bytes in length. Blocking allows efficient use of storage space by reducing the number of interrecord gaps in the data set. Blocking also reduces processing time because fewer input/output operations are required to process entire blocks of records. When the records fit into the data block, the VB fixed-length format applies.

When a variable-length record is larger than the physical block size, it is segmented so that it can be written into more than one block, VBS format. When spanning is specified for blocked records, the system attempts to fill all blocks, thus maximizing storage space.

The OM and LOG data sets are encoded in extended binary-coded decimal interchange code (EBCDIC) with the character set as defined by the IBM standard PN print train for 1403 and 1404 printers. The DMS output data can also output other representations (ASCII, binary, etc.) for compatibility with the downstream system or to provide greater compactness in transmission. The automatic mesasage accounting (AMA) dataset is encoded in binary-coded decimal (BCD) 4-bit code (see *Automatic Message Accounting - Northern Telecom Format*, 297-1001-119), and the call detail recording (CDR) dataset is encoded in EBCDIC (see *Call Detail Recording Description*, 297-2301-119).

Variable-length Blocked (VB) records

In the VB record format, see Figure 4-1 on page 4-4, each record can vary in length between a minimum of 18 characters up to the maximum of 2048 characters per block. Since individual records rarely approach the maximum

number of characters, they are arranged in numerical sequence in the block until the total number of characters the maximum.

Because spanning is not permitted in the VB format, the last record having the excess of characters, is not written into the first block, but becomes the first record of the following block. Blocks, therefore, will vary in length, depending on the difference between the maximum length of 2048 characters, and the sum of all the characters in all the records in each block.

Variable-length Blocked Spanned (VBS) records

Format VBS provides for variable-length records (see Figure 4-2 on page 4-5), the variable-length record segments, each of which describes its own characteristics, and blocks of variable-length records or record segments.

Descriptor words

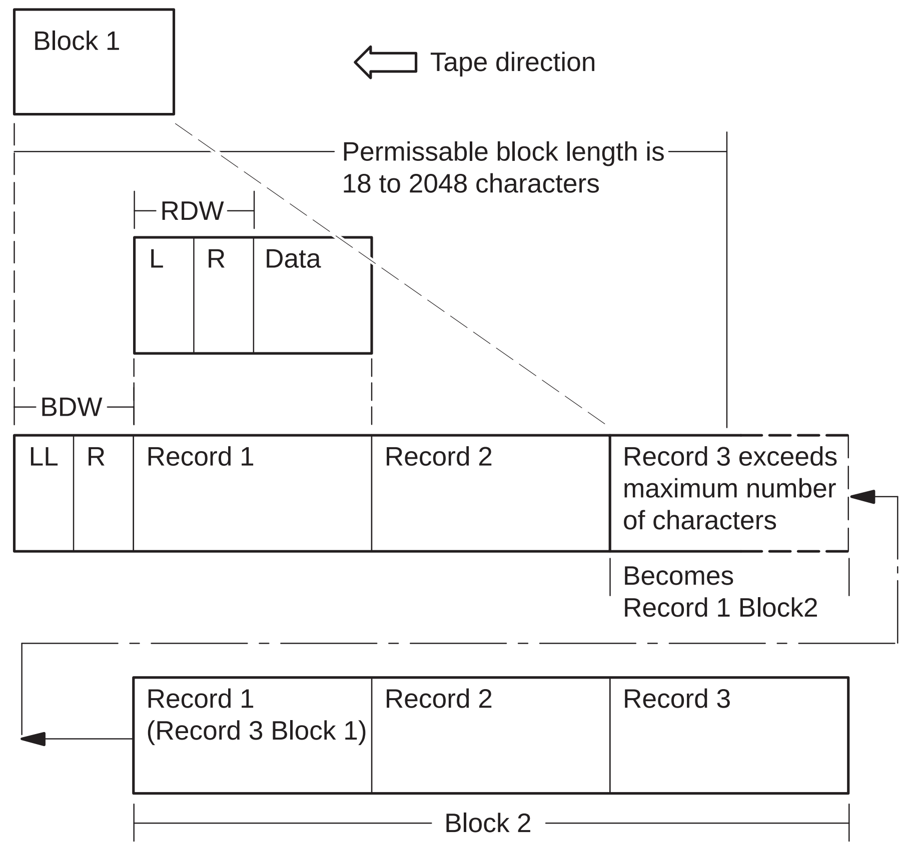
Descriptor words are the first four bytes of each block, record, or record segment. The organization of these headers is compatible with the sequential access methods of IBM OS and they contain control information as follows:

- Block descriptor word
  - — Each variable-length block consists of a 4-byte block descriptor word (BDW) followed by one or more logical records or record segments. The first 2 bytes of the BDW specify the block length (LL), which is the total length of all the records or segments within the block, including the BDW. The third and fourth bytes are reserved for future system use and must have a value of zero.
- Record descriptor word
  - — Each variable-length record consists of a 4-byte record descriptor word (RDW) followed by data. The first two bytes contain the length (L) of the record, including the RDW. The remaining two bytes are reserved for future system use.
- Segment descriptor word
  - — Each record segment consists of a 4-byte segment descriptor word SDW followed by a segment of data. The first two bytes contain the lengths (L1, L2, L3) of the segments, including the SDW. The third byte contains the segment control code. The least significant two bits of the byte are defined as follows:
    - 00 = Complete record
    - 01 = First segment of a multisegment record
    - 10 = Last segment of a multisegment record

  - 11 = An intermediate segment of a multisegment record, that is, other than the first or last segment

- The remainder of the third byte and all of the fourth byte is reserved for future system use and must have a value of zero.

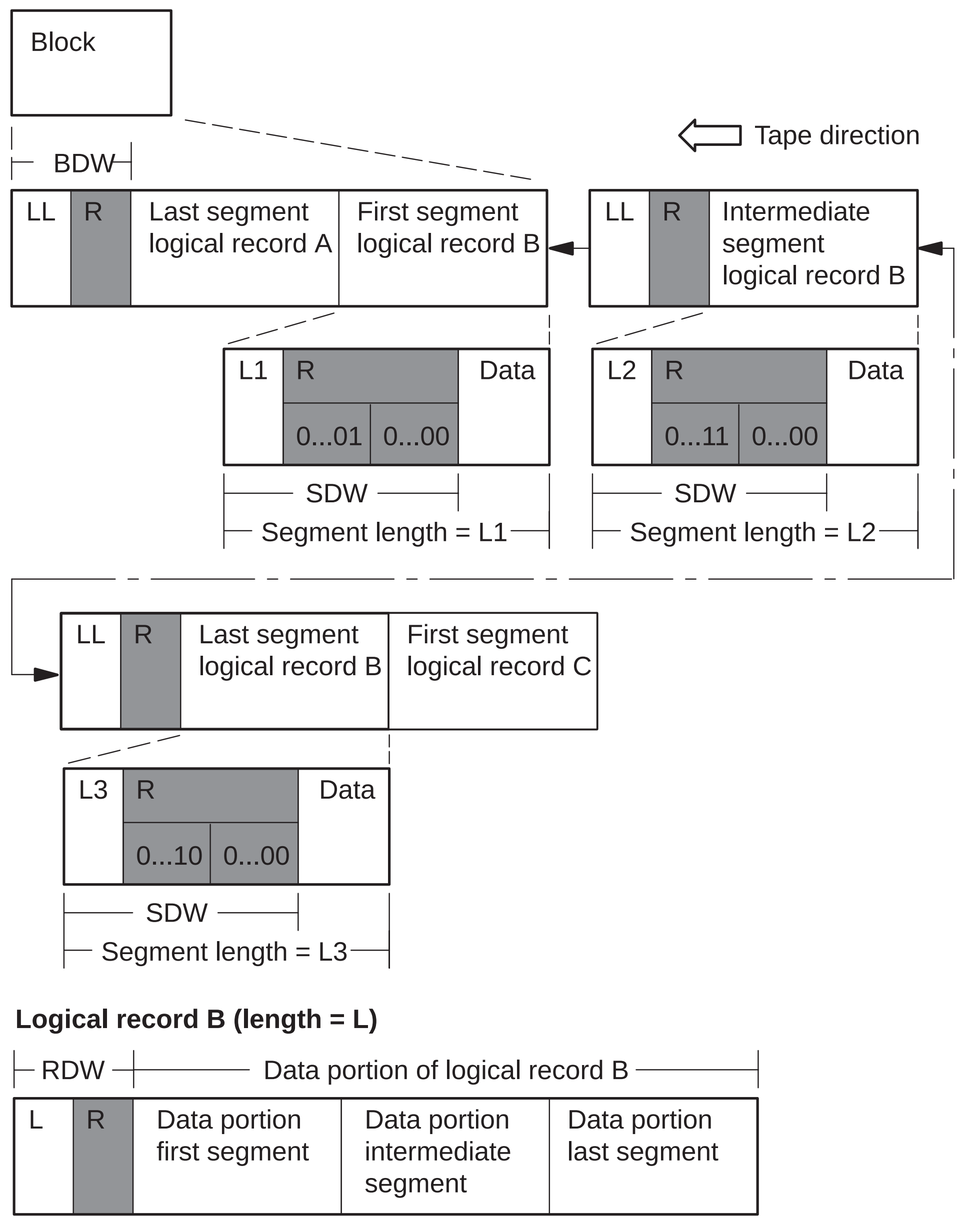
Figure 4-1
Variable-length, Blocked (VB) Record Format



Legend:

BDW	Block descriptor word
L	Record length (2 bytes)
LL	Block length (2 bytes)
R	Reserved (2 bytes)
RDW	Record descriptor word

Figure 4-2
Variable-length, Blocked, Spanned (VBS) Format



Legend:

BDW	Block descriptor word	R	Reserved (2 bytes)
L	Record length (2 bytes)	RDW	Record descriptor word
LL	Block length (2 bytes)	SDW	Segment descriptor word

Treatment of magnetic tapes

Security

Each time a magnetic tape is mounted, its dataset name and expiry date are displayed, and permission to overwrite the magnetic tape must be requested from the operator.

Error detection

Errors may occur during the reading or recording of data on tapes. To ensure that these errors are detected, each tape conducts odd parity checks and is equipped with a read-while-write mechanism. This mechanism sets trouble flags (to be interpreted by software) when malfunctions and hardware read/write buffer mismatches occur. In addition, diagnostic programs exist to reveal any errors left undetected by the parity checks and/or the read-while-write mechanism.

Handling of multivolume tapes

When recording multivolume tapes, the number of tapes in the set that is required to store the data is not known until the transfer session is complete. The number of tapes, as well as the serial numbers of all tapes in the set, must be made available to the downstream processing centre, which reads the tape data. Tapes cannot be read out of sequence because information, which is used to for information purposes by the operator in the processing centre, is contained in the HDR1 label of all tapes which is used to inform the operator in the processing centre to halt the reading of the tape.

List of terms

AMA

Automatic message accounting

ANSI

American National Standards Institute

BCD

Binary–coded decimal

BDW

Block descriptor word

BOT

Beginning of tape

BPI

Bytes per inch

CDM

Customer data modification

CDR

Call detail recording

CPI

Characters per inch

DAT

Digital audio tape

DDS

Digital data storage

EBCDIC
Extended BCD interchange code

EOF
End of file

EOT
End of tape

EOV
End of volume

HDR
Header label

IRG
Interrecord gap

ODM
Office data modification

OM
Operational measurements

PE
Phase–encoded

RDW
Record descriptor word

SDW
Segment descriptor word

UHL
User header labels

UTL
User trailer labels

VB
Variable–length blocked

VBS

Variable–length blocked spanned

VOL

Volume label

DMS-100 Family

Magnetic Tape

Reference Manual

Product Documentation—Dept 3423
Northern Telecom
P.O. Box 13010
RTP, NC 27709–3010
1-877-662-5669, Option 4 + 1

Publication number: 297-1001-118
Product release: BASE08
Document release: Standard 04.01
Date: August 1999
Printed in the United States of America

NORTEL
NORTHERN TELECOM